ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)		DATE February 2000
BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604280A Joint Tactical Radio	PROJECT D162

COST (*In Thousands*)	FY1999 Actual	FY 2000 Estimate	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY2005 Estimate	Cost to Complete	Total Cost
D162 Joint Tactical Radio System	0	36520	62218	80065	65691	50917	40121	Continuing	Continuing

A. Mission Description and Justification: The mission of the Joint Tactical Radio System (JTRS) Joint Program Office (JPO) is to develop a Software Communications Architecture (SCA) and software waveforms that will enable the Services to acquire a family of affordable, scaleable, high-capacity, interoperable Line of Sight (LOS) and Beyond Line of Sight (BLOS) radios. The Army is the Executive Service for this joint program. The singular functionality of current stovepipe systems lacks the connectivity and throughput capacity to support required simultaneous networked voice, video, and data operations with low probability of intercept over multiple frequency bands. Each unique current radio system requires significant allocation of space, weight, power, and cooling on weapons systems platforms, and has a costly logistics infrastructure.   These inadequacies are addressed by requirements in the JTRS Operational Requirements Document (ORD). In addition to addressing the problems associated with stovepipe radios, the JTRS program will provide a significant increase in capability while providing a solid foundation for interoperability, and for achieving network connectivity across the RF spectrum. This program element will validate the SCA through hardware and software prototypes. The building of these hardware and software prototypes, using SCA documentation, and the subsequent passing of information between the prototypes and requisite legacy systems will also provide the foundation to validate these prototypes and demonstrate interoperability with each other and with legacy systems. This program element will manage the continual evolution of the SCA, develop a set of software-based tactical waveforms, as described in the ORD, and provide a certification infrastructure for compliance testing of all hardware and software products. The program element also provides a path for advancing technology and resolving problems unique to the military environment. The open standards based SCA will provide the path for future hardware and software growth of delivered systems by allowing the Services to take advantage of advances in technology being driven by the commercial wireless communications marketplace. The overall JTRS program will provide software programmable and hardware configurable digital radio systems that demonstrate increased interoperability, flexibility and adaptability. JTRS will provide the operational forces with an upgraded communications capability for more effective battlespace management and interoperability among Command, Control, Communications, Computers and Intelligence (C4I) Systems supporting the warfighters' goal of realizing a fully digitized battlespace.

B. Program Change Summary	FY 1999	FY 2000	FY 2001
Previous President's Budget (FY 2000/2001 PB)	0	36797	68296
Appropriated Value		36797	
Adjustments to Appropriated Value			
a. Congressional General Reductions			
b. SBIR / STTR			
c. Omnibus or Other Above Threshold Reductions		- 150	
d. Below Threshold Reprogramming			
e. Rescissions		-127	
Adjustments to Budget Years Since FY 2000/2001 PB			-6078
Current Budget Submit (FY 2001 PB)	0	36520	62218

Project D162   *Page 1 of 5 Pages*   Exhibit R-2 (PE 0604280A)

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000

BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604280A Joint Tactical Radio	PROJECT D162

FY 1999 Accomplishments: Project funded in PE 0603280A, project D155.

FY 2000 Planned Program:

- 27329 Validate SCA, using hardware and software waveforms built to SCA documentation. Institute architecture disputes resolution process. Plan for post-MDAP decision program implementation. Conduct market survey.
- 966 Develop hardware and software waveform certification process, using existing test facilities where possible.
- 4041 Continue JPO technical support, including systems engineering, spectrum allocation and approval for use, and cryptographic engineering, in support of SCA activities.
- 3201 Continue JPO program support, including administration, program management, legal, contracting, budget execution and cost estimating activities.
- 983 Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) Program.

Total   36520

FY 2001 Planned Program:

- 38526 Maintain and evolve the SCA, resolve residual validation issues, begin acquisition of waveforms listed in Table 1 of JTRS ORD.
- 6817 Provide for technology advancement and problem resolution, to include areas such as multiple independent levels of security (MILS) and network security.
- 7801 Implement hardware and software waveform certification process (SCA compliance testing).
- 5545 Continue JPO technical support, including waveform development, systems engineering, spectrum allocation and approval for use, cryptographic engineering and problem resolution and support of SCA activities. Provide SCA guidance to Service program management offices.
- 3529 Continue JPO program support, including administration, program management, legal, contracting, budget execution and cost estimating activities.

Total   62218

B. Other Program Funding Summary	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	To Compl	Total Cost
RDTE, 0603280A, D155 JTRS	13404								24445
RDTE, 0604805A, D615 JTRS Ground Domain		4867	28542	79171	42117	62831	48377	80000	347865
OPA, Army, ADDS, BU 1400/JTRS							39615	1583443	1603915

C. Acquisition Strategy: The JTRS development strategy consists of a three-Step process. Step 1 resulted in a baseline architecture definition. In Step 2, the architecture definition is being developed and validated as the Software Communications Architecture (SCA). The SCA is expected to become the Government and Industry standard for software radios. As such, it will be the basis for acquiring future Department of Defense (DoD) software radios. The validation process will use hardware prototypes and an initial set of software-based tactical waveforms. Concurrently with validation activities, the JPO will conduct a market survey, which will benchmark Industry capabilities with respect to the architecture. At the completion of these activities, a Major Defense Acquisition Program (MDAP) review will be held. Following a successful MDAP

ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)	DATE February 2000

BUDGET ACTIVITY 5 - Engineering and Manufacturing Development	PE NUMBER AND TITLE 0604280A Joint Tactical Radio	PROJECT D162

decision, Step 3 activities will begin. The Services will perform acquisition, integration, testing, fielding and training activities. The JPO will continue to maintain and evolve the SCA, acquire waveforms listed in Table 1 of the ORD, and address technology advancement issues. The JPO will provide certification of JTRS SCA compliance for acquired systems and waveforms.

D. Schedule Profile	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
JTRS Initial Architecture Definition Selected*	3Q						
Begin Architecture Development and Validation*		1Q					
Deliver Version 1.0 of SCA		3Q					
Prototypes and Required Waveforms Available to Begin SCA Validation		3Q					
Begin Certification Process		3Q					
Conduct Market Survey		4Q					
Complete Required SCA Validation with Waveforms and Prototypes		4Q					
Deliver Version 2.0 of SCA		4Q					
MDAP Review			1Q				
Begin Acquiring ORD Waveforms			2Q-4Q				
Continue to Acquire ORD Waveforms				1Q-4Q	1Q-4Q	1Q-4Q	
Maintain and Evolve SCA			2Q-4Q				
Continue to Maintain and Evolve SCA				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Address Technology Advancement Issues			2Q-4Q				
Continue to Address Technology Advancement Issues				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Provide Certification of JTRS SCA Compliance for Acquired Systems and Waveforms			2Q-4Q				
Continue to Provide Certification of JTRS SCA Compliance for Acquired Systems and Waveforms				1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q

*Program funded in PE 0603280A in FY 1998/1999.

ARMY RDT&E COST ANALYSIS (R-3)							DATE **February 2000**			
BUDGET ACTIVITY **5 - Engineering and Manufacturing Development**				**PE NUMBER AND TITLE** **0604280A Joint Tactical Radio**					**PROJECT** **D162**	

I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost *	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Architecture Development, Validation, Waveform re-coding	Other Trans Agreements (OTA) ; Various	Step 1: Various (3 consortia) Step 2A: Raytheon Consortium Step 2B: TBD-Various	Step 1: 4500 Step 2A: 10500	Step 2A: 11441 Step 2B: 15523 Other Architecture-related: 1093	Step 2A:1Q Step 2B:2Q Various contracts Other:1Q	38526	2Q various contracts	Continuing	Continuing	N/A
b. Certification Infrastructure	TBD	TBD	0	1000	3Q	7801	2Q	Continuing	Continuing	N/A
c. Technology Insertion	TBD	TBD	0			6817	2Q various contracts	Continuing	Continuing	N/A
Subtotal Product Development:			15000	29057		53144				

*Funded under PE 0603280A in FY 1998/1999.

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost *	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. FFRDC – MITRE and Other contracted Technical Support	FFP	Various	5752	4148	1Q	5545	1Q/2Q various contracts	Continuing	Continuing	N/A
Subtotal Support Costs:			5752	4148		5545			Continuing	

*Funded under PE 0603280A in FY 1998/1999.

III. Test and Evaluation: Not applicable.

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost *	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Support	Various	Various	3653	2332	1Q	3529	1Q/2Q various contracts	Continuing	Continuing	N/A
b. Other (SBIR/STTR)				983						
Subtotal Management Svcs:			3653	3315		3529		Continuing	Continuing	

*Funded under PE 0603280A in FY 1998/1999.

ARMY RDT&E COST ANALYSIS (R-3)			DATE	**February 2000**

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - Engineering and Manufacturing Development	**0604280A Joint Tactical Radio**	**D162**

			Total PYs Cost *	FY 2000 Cost		FY 2001 Cost		Cost To Complete	Total Cost	
Project Total Cost:			24405	36520		62218		Continuing	Continuing	

*Funded under PE 0603280A in FY 1998/1999.

Project D162   *Page 5 of 5 Pages*   Exhibit R-3 (PE 0604280A)

Item 78